

Progress in Solving the Enigma of Anterior Cruciate Ligament Injuries

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Editorial

The scene is familiar to everybody watching or playing sports that involve jump-landing or pivoting activities such as basketball and soccer. An athlete who a few seconds ago was running down the field in full speed is now on the ground while the paramedics rush to him/her. The instant replays commonly show no contact; the athlete performed a task that he/she has done thousands of times before. This time, however, a pop was heard and the athlete felt immediate pain while the knee buckled. The next day we find out that the athlete will be out for six months due to an anterior cruciate ligament (ACL) tear.

It has become apparent by looking at the findings of long-term studies that most athletes who suffer ACL tears will remember the moment of the injury for the rest of their lives. Although many of these athletes will return to playing sports, most of them will develop early onset knee osteoarthritis even after surgical treatment [1]. Progress is constantly made in the development of surgical techniques that better restore rotatory instability [2] or maintain the original ACL properties [3]. However, prevention of ACL injuries is still the optimal solution to avoiding early onset knee osteoarthritis in the athletic population. Recent research has identified several predisposing factors to ACL injury among female athletes who suffer ACL injuries at a much higher rate than their male counterparts [4]. Female athletes land with higher knee valgus [5,6] and greater side-to-side biomechanical asymmetries [7,8] than male athletes. Additionally, prospective studies have demonstrated that high knee valgus [9], greater quadriceps to hamstrings strength and poor trunk control [10] are predictors of ACL injury in athletes. It appears; however, that the factors causing increased likelihood for ACL tears among females are not innate. Female dancers do not land from a jump in a biomechanically riskier way than male dancers [11] and they have much lower injury rates than female athletes [12]. This is particularly promising as it suggests that specialized training may decrease ACL injury risk among females.

Several ACL injury prevention programs have been developed that demonstrate effectiveness in decreasing non-contact injuries among female athletes [13]. Programs that include correction of faulty landing patterns, plyometrics and balance exercises appear to be more effective in decreasing ACL injury rates [13]. Despite of their effectiveness, injury prevention programs are not widely implemented by female athletic teams. Recent clinical instruments that allow accurate identification of athletes who are at highest risk for ACL injury [14] and development of short, yet effective, injury prevention programs that can be used instead of a warm-up [15] may lead to wider implementation. The question of the optimal timing and duration of injury prevention programs remains unsolved. The disparity in knee injury rates and the emergence of biomechanical differences between male and female athletes appear to coincide with puberty [16,17]. Thus, puberty may be a good time to screen female athletes for ACL injury risk factors and enroll them to prevention programs. Hopefully, further progress in the understanding, prevention and treatment of ACL injuries will be made in the near future and reverse the increasingly common experience in the physical therapy clinic where we have to tell young, active athletes that they may have to stop impact sports because of knee degeneration.

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Received February 27, 2012; Accepted February 27, 2012; Published March 01, 2012

Citation: Pappas E (2012) Progress in Solving the Enigma of Anterior Cruciate Ligament Injuries. *J Nov Physiother* 2:e113. doi:10.4172/2165-7025.1000e113

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